

**ABSTRACT OF THE DISCLOSURE**

5 A queue of samples for NMR analysis is disposed within a thermally isolate NMR magnet bore and distal elements of the queue approach thermal equilibrium concurrently with NMR analysis of a sample within the sensitive volume. In one embodiment, a sequence of NMR sample cells within a barrel coaxial with a vertical bore NMR spectrometer are maintained at a selected temperature by a heated gas and the queue of sample cells advances to the analytic position under gravity when the lowest sample cell is displaced from the queue in response to an end-of-analysis signal generated by said spectrometer.